

# REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference (if desired) (12 characters maximum) UMBC-0012PCT

**Box No. I TITLE OF INVENTION**  
PROTEINS, SENSORS, AND METHODS OF CHARACTERIZING ANALYTES USING THE SAME

**Box No. II APPLICANT** ☐ This person is also inventor

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

UNIVERSITY OF MARYLAND BALTIMORE COUNTY  
1000 Hilltop Circle  
Baltimore, Maryland 21250  
United States of America

Telephone No.

Facsimile No.

Teleprinter No.

Applicant's registration No. with the Office

State (that is, country) of nationality:  
US

State (that is, country) of residence:  
US

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

**Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)**

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

TOLOSA, Leah  
2 Poolside Court, 1-C  
Catonsville, Maryland 21228  
United States of America

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:  
PH

State (that is, country) of residence:  
US

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

**Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

VAZQUEZ, René A.  
FLESHNER & KIM, LLP  
P.O. Box 221200  
Chantilly, Virginia 20153-1200  
United States of America

Telephone No.

(703) 766-3701

Facsimile No.

(703) 766-3644

Teleprinter No.

Agent's registration No. with the Office

38,647

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

CONTINUATION OF BOX NO. 111      1. OTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)			
<i>If none of the following sub-boxes is used, this sheet should not be included in the request.</i>			
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i>  RAO, Govind 10401 Northdale Road Columbia, Maryland 21044 United States of America	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">               This person is:   <input type="checkbox"/> applicant only  <input checked="" type="checkbox"/> applicant and inventor  <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i> </td> </tr> <tr> <td style="padding: 2px;">               Applicant's registration No. with the Office             </td> </tr> </table>	This person is:  <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>	Applicant's registration No. with the Office
This person is:  <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>			
Applicant's registration No. with the Office			
State <i>(that is, country)</i> of nationality: US	State <i>(that is, country)</i> of residence: US		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box			
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i>  GE, Xudong 912 Hooper Avenue, Apt. D Baltimore, Maryland 21229 United States of America	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">               This person is:   <input type="checkbox"/> applicant only  <input checked="" type="checkbox"/> applicant and inventor  <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i> </td> </tr> <tr> <td style="padding: 2px;">               Applicant's registration No. with the Office             </td> </tr> </table>	This person is:  <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>	Applicant's registration No. with the Office
This person is:  <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>			
Applicant's registration No. with the Office			
State <i>(that is, country)</i> of nationality: CN	State <i>(that is, country)</i> of residence: US		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box			
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i>      	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">               This person is:   <input type="checkbox"/> applicant only  <input type="checkbox"/> applicant and inventor  <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i> </td> </tr> <tr> <td style="padding: 2px;">               Applicant's registration No. with the Office             </td> </tr> </table>	This person is:  <input type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>	Applicant's registration No. with the Office
This person is:  <input type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>			
Applicant's registration No. with the Office			
State <i>(that is, country)</i> of nationality:  	State <i>(that is, country)</i> of residence:  		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box			
Name and address: <i>(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)</i>      	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">               This person is:   <input type="checkbox"/> applicant only  <input type="checkbox"/> applicant and inventor  <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i> </td> </tr> <tr> <td style="padding: 2px;">               Applicant's registration No. with the Office             </td> </tr> </table>	This person is:  <input type="checkbox"/> applicant only <input type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only <i>(If this check-box is marked, do not fill in below.)</i>	Applicant's registration No. with the Office
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Applicant's registration No. with the Office			
State <i>(that is, country)</i> of nationality:  	State <i>(that is, country)</i> of residence:  		
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box			
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on another continuation sheet.			

**Supplemental Box***If the Supplemental Box is not used, this sheet should not be included in the request.*

1. If, in any of the Boxes, except Boxes Nos. VIII(i) to (v) for which a special continuation box is provided, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ...." (indicate the number of the Box) and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:

- (i) if more than two persons are to be indicated as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI.

## Continuation of Box No. IV

FLESHNER, Mark L.	Reg. No. 34,596
KIM, Daniel Y.J.	Reg. No. 36,186
EISENHART, John C.	Reg. No. 38,128
WESOLOWSKI, Carl R.	Reg. No. 40,372
MCPHAIL, Donald R.	Reg. No. 35,811
VAZQUEZ, Rene A.	Reg. No. 38,647
DRUZBICK, Carol L.	Reg. No. 40,287
HELMER, Steve J.	Reg. No. 40,475
NTIROS, Samuel W.	Reg. No. 39,319
SPEER, Timothy M.	Reg. No. 47,355
YOUNG, Bryant	Reg. No. 49,073

All of the individuals mentioned above are attorneys at Fleshner & Kim, LLP and have been appointed by the applicant through a General Power of Attorney.

2. If the applicant intends to make an indication of the wish that the international application be treated, in certain designated States, as an application for a patent of addition, certificate of addition, inventor's certificate of addition or utility certificate of addition: in such a case, write the name or two-letter code of each designated State concerned and the indication "patent of addition," "certificate of addition," "inventor's certificate of addition" or "utility certificate of addition," the number of the parent application or parent patent or other parent grant and the date of grant of the parent patent or other patent grant or the date of filing of the parent application (Rules 4.11(a)(iii) and 49bis.1(a) or (b)).
3. If the applicant intends to make an indication of the wish that the international application be treated, in the United States of America, as a continuation or continuation-in-part of an earlier application: in such a case, write "United States of America" or "US" and the indication "continuation" or "continuation-in-part" and the number and the filing date of the parent application (Rules 4.11(a)(iv) and 49bis.1(d)).

Box No. V	DESIGNATIONS
<p>The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.</p> <p>However,</p> <p><input type="checkbox"/> DE Germany is not designated for any kind of national protection</p> <p><input type="checkbox"/> KR Republic of Korea is not designated for any kind of national protection</p> <p><input type="checkbox"/> RU Russian Federation is not designated for any kind of national protection</p> <p><i>(The check-boxes above may be used to exclude (irrevocably) the designations concerned in order to avoid the ceasing of the effect, under the national law, of an earlier national application from which priority is claimed. See the Notes to Box No. V as to the consequences of such national law provisions in these and certain other States.)</i></p>	

Box No. VI PRIORITY CLAIM

The priority of the following earlier application(s) is hereby claimed:

Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application: * regional Office	international application: receiving Office
item (1) 09 May 2003 (09/05/2003)	60/469,560	US		
item (2)				
item (3)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office)* identified above as:

☐ all items    ☒ item (1)    ☐ item (2)    ☐ item (3)    ☐ other, see Supplemental Box

\* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)): . . .

## Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / US

**Request to use results of earlier search; reference to that search** (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)	Number	Country (or regional Office)
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**Box No. VIII DECLARATIONS**

The following <b>declarations</b> are contained in Boxes Nos. VIII (i) to (v) ( <i>mark the applicable check-boxes below and indicate in the right column the number of each type of declaration</i> ):	Number of declarations
---	------------------------

☐ Box No. VIII (i) Declaration as to the identity of the inventor :

- |                          |                    |  |   |
|--------------------------|--------------------|--|---|
| <input type="checkbox"/> | Box No. VIII (i)   | Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent             | : |
| <input type="checkbox"/> | Box No. VIII (ii)  | Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application | : |
| <input type="checkbox"/> | Box No. VIII (iii) | Declaration of inventorship (only for the purposes of the designation of the United States of America)                               | : |
| <input type="checkbox"/> | Box No. VIII (iv)  | Declaration as to non-prejudicial disclosures or exceptions to lack of novelty   | : |

**Box No. IX CHECK LIST; LANGUAGE OF FILING**

This international application contains:	This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):	Number of items
<p>(a) in paper form, the following number of sheets:</p> <p>request (including declaration sheets) : 5</p> <p>description (excluding sequence listing and/or tables related thereto) : 68</p> <p>claims : 5</p> <p>abstract : 1</p> <p>drawings : 22</p> <p><b>Sub-total number of sheets : 101</b></p> <p>sequence listing : _____</p> <p>tables related thereto : _____</p> <p><i>(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)</i></p> <p><b>Total number of sheets : 101</b></p> <p>(b) <input type="checkbox"/> only in computer readable form (Section 801(a)(i))</p> <p style="margin-left: 20px;">(i) <input type="checkbox"/> sequence listing</p> <p style="margin-left: 20px;">(ii) <input type="checkbox"/> tables related thereto</p> <p>(c) <input type="checkbox"/> also in computer readable form (Section 801(a)(ii))</p> <p style="margin-left: 20px;">(i) <input type="checkbox"/> sequence listing</p> <p style="margin-left: 20px;">(ii) <input type="checkbox"/> tables related thereto</p> <p>Type and number of carriers (diskette, CD-ROM, CD-R or other) on which are contained the</p> <p><input type="checkbox"/> sequence listing: _____</p> <p><input type="checkbox"/> tables related thereto: _____</p> <p><i>(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)</i></p>	<p>1. <input checked="" type="checkbox"/> fee calculation sheet : 1</p> <p>2. <input type="checkbox"/> original separate power of attorney : _____</p> <p>3. <input type="checkbox"/> original general power of attorney : _____</p> <p>4. <input type="checkbox"/> copy of general power of attorney; reference number, if any: : _____</p> <p>5. <input type="checkbox"/> statement explaining lack of signature : _____</p> <p>6. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): : _____</p> <p>7. <input type="checkbox"/> translation of international application into (language): : _____</p> <p>8. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material : _____</p> <p>9. <input type="checkbox"/> sequence listing in computer readable form (indicate type and number of carriers)</p> <p style="margin-left: 20px;">(i) <input type="checkbox"/> copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application) : _____</p> <p style="margin-left: 20px;">(ii) <input type="checkbox"/> (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter : _____</p> <p style="margin-left: 20px;">(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the sequence listing mentioned in left column : _____</p> <p>10. <input type="checkbox"/> tables in computer readable form related to sequence listing (indicate type and number of carriers)</p> <p style="margin-left: 20px;">(i) <input type="checkbox"/> copy submitted for the purposes of international search under Section 802(b-quater) only (and not as part of the international application) : _____</p> <p style="margin-left: 20px;">(ii) <input type="checkbox"/> (only where check-box (b)(ii) or (c)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quater) : _____</p> <p style="margin-left: 20px;">(iii) <input type="checkbox"/> together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column : _____</p> <p>11. <input checked="" type="checkbox"/> other (specify): Filing Receipt and Check. : 2</p>	


Figure of the drawings which should accompany the abstract:

Language of filing of the international application:

English

**Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE**

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

  
 René A. Vazquez Donald R. McQuinn  
 Reg. No. 38,647 REG. NO. 35,811

For receiving Office use only

<p>1. Date of actual receipt of the purported international application: _____</p> <p>3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application: _____</p> <p>4. Date of timely receipt of the required corrections under PCT Article 11(2): _____</p> <p>5. International Searching Authority (if two or more are competent): ISA / _____</p>	<p>2. Drawings:</p> <p><input type="checkbox"/> received:</p> <p><input type="checkbox"/> not received:</p> <p>6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid</p>
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For International Bureau use only

Date of receipt of the record copy by the International Bureau:

# PCT

## FEE CALCULATION SHEET Annex to the Request

For receiving Office use only

International Application No.

Applicant's or agent's  
file reference

UMBC-0012PCT

Date stamp of the receiving Office

Applicant

University of Maryland Baltimore County

### CALCULATION OF PRESCRIBED FEES

1. TRANSMITTAL FEE . . . . . 300.00 [T]

2. SEARCH FEE . . . . . 1,000.00 [S]

International search to be carried out by US  
(If two or more International Searching Authorities are competent to carry out the international search, indicate the name of the Authority which is chosen to carry out the international search.)

3. INTERNATIONAL FILING FEE

Where items (b) and/or (c) of Box No. IX apply, enter Sub-total number of sheets } 101  
Where items (b) and (c) of Box No. IX do not apply, enter Total number of sheets }

[i1] first 30 sheets . . . . . 1,035.00 [i1]

[i2] 71 x 11.00 = 781.00 [i2]  
number of sheets fee per sheet  
in excess of 30

[i3] additional component (only if sequence listing and/or tables related thereto are filed in computer readable form under Section 801(a)(i), or both in that form and on paper, under Section 801(a)(ii)):

400 x            =            [i3]  
fee per sheet

Add amounts entered at i1, i2 and i3 and enter total at I . . . . . 1,819.00 [I]

(Applicants from certain States are entitled to a reduction of 75% of the international filing fee. Where the applicant is (or all applicants are) so entitled, the total to be entered at I is 25% of the international filing fee.)

4. FEE FOR PRIORITY DOCUMENT (if applicable) . . . . . 20.00 [P]

5. TOTAL FEES PAYABLE . . . . . 3,136.00  
Add amounts entered at T, S, I and P, and enter total in the TOTAL box  
TOTAL

### MODE OF PAYMENT

- ☐ authorization to charge deposit account (see below) ☐ postal money order ☐ cash ☐ coupons  
☒ cheque ☐ bank draft ☐ revenue stamps ☐ other (specify):

### AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT (This mode of payment may not be available at all receiving Offices)

- ☐ Authorization to charge the total fees indicated above.  
☒ (This check-box may be marked only if the conditions for deposit accounts of the receiving Office so permit) Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.  
☐ Authorization to charge the fee for priority document.

Receiving Office: RO/ US

Deposit Account No.: 16-0607

Date: 01 March 2004

Name: Rene A. Vazquez

Signature: [Signature] Donada ASK AS 30 8/14